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ABSTRACT

This report discusses consumer and corporate problems associated with product performance and servicing of consumer durables (such as automobiles, large and small appliances, and televisions and phonographs), and outlines action which should be taken by manufacturers, trade and professional associations, and government to assure quality and responsiveness in this area. The report is divided into four main parts: (1) Rationale of the committee report, (2) before-sale activities (design, product assurance, product assurance system elements, product engineering, product standards and design, manufacturing and quality control, and transportation), (3) during-sale activities (product informations, use, care, and service), and (4) after-sale activities (service personnel recruitment and training, job status, job qualifications, vocational education and the service industry, manufacturer service training, service personnel certification programs, estimating service fraud, licensing, code of responsible servicing practices, replacement parts availability, and complaint resolutions). The 18 recommendations, and the code of responsible servicing practices are included. (WL)

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Product Performance and Servicing

An Examination of Consumer Problems and Business Responses

Report of the Sub-Council on Performance and Service of the National Business Council for Consumer Affairs

September 1973

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Honorable Frederick B. Dent
Secretary of Commerce
Washington, D.C. 20230

Dear Mr. Secretary:

Attached for your consideration is a report entitled "Product Performance and Servicing: An Examination of Consumer Problems and Business Responses," prepared by the Sub-Council on Performance and Service of the National Business Council for Consumer Affairs.

In accord with the assignment the NBCCA received from President Nixon, the Sub-Council has identified and examined the reasons for consumer dissatisfaction with the performance and servicing of selected consumer durable products. The report includes recommendations for manufacturers, trade and professional associations, and government which should result in direct benefits for consumers.

We urge you to bring this report to the attention of interested individuals and organizations in the private and public sectors with your request for prompt action on its recommendations.

Sincerely,

Robert E. Brooker

Robert E. Brooker, Chairman
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for Consumer Affairs

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Summary

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I. INTRODUCTION

Consumer durables such as automobiles, large and small appliances, televisions and phonographs have become important parts of most consumer life styles. Failure of these products can result in major inconveniences. If repairs cannot be completed promptly and competently, the resulting frustration can easily lead to general dissatisfaction with the performance and servicing of all consumer durable goods. Public opinion surveys indicate that many consumers already hold this view.

This report discusses the consumer and corporate problems associated with product performance and servicing, and outlines actions which should be taken to assure quality and responsiveness in this area.

5 II. BEFORE SALE ACTIVITIES

The manufacturer's first task is to design reliability, durability, serviceability, performance capability, and producibility into the product. One method developed to assure these factors are adequately considered is the use of written guidelines for designing products. The adoption of such guidelines by a growing number of companies suggests that:

9 RECOMMENDATION 1

MANUFACTURERS SHOULD MAINTAIN AND ENFORCE UP-TO-DATE, WRITTEN POLICIES AND PROCEDURES ON PRODUCT QUALITY AND RELIABILITY.

Because reliability engineering can help assure consideration of vital consumer interests from the very beginning of the product development cycle:

13 RECOMMENDATION 2

MANUFACTURERS SHOULD ESTABLISH A RELIABILITY ENGINEERING RESPONSIBILITY AS A PRIORITY ACTIVITY IN THE DESIGN AND MANUFACTURING SEQUENCE.

Reliability engineering tasks such as design for serviceability, analysis of service problems, and standardization of parts, all directly reflect consumer needs and expectations.

Establishment of product standards within the company can improve product serviceability and reliability by setting minimum design criteria and performance

Page

levels, by promoting consideration of product safety characteristics during product design, and by reducing proliferation of parts. The Sub-Council therefore recommends:

RECOMMENDATION 3 15

MANUFACTURERS SHOULD PROMOTE THE DEVELOPMENT AND USE OF CORPORATE PRODUCT STANDARDS.

Several manufacturers have added review boards, warranty committees, and service technician advisory groups to their product assurance systems. These units can demonstrate management's commitment to improving quality and reliability and assure a continuing review and evaluation of the product assurance system. Accordingly:

RECOMMENDATION 4 17

MANUFACTURERS SHOULD ESTABLISH ADVISORY BODIES OF CORPORATE AND SERVICE PERSONNEL TO CONTINUALLY REVIEW AND MONITOR PRODUCT ASSURANCE SYSTEMS.

III. DURING SALE ACTIVITIES 20

The existence and use of two general types of information at time of sale can help reduce the potential for consumer complaints. The first of these—product information—can contribute to a better match between consumer needs and ability to pay, and product capabilities. The second—use, care, and service information—can show the consumer how to operate and maintain his product to obtain good and lasting performance.

Many segments of the business community are responding to consumer demands for more and better product information. Development of such data is dependent upon the commitment of individual manufacturers to provide information on their own products and to participate in efforts, usually carried on by trade associations, which establish mechanisms for all manufacturers to provide similar material to consumers. Accordingly, the Sub-Council recommends:

RECOMMENDATION 5 22

WHEREVER APPROPRIATE, MANUFACTURERS SHOULD PROMOTE THE DEVELOPMENT OF MECHANISMS FOR PROVIDING CONSUMERS WITH PERFORMANCE INFORMATION ON CONSUMER DURABLES.

Page

Industry efforts aimed at upgrading owner manuals to improve their information content and readability can pay large dividends in complaint reduction. To achieve this goal:

26 RECOMMENDATION 6
MANUFACTURERS SHOULD GIVE PRIORITY TO THE DEVELOPMENT OF OWNER MANUALS THAT ARE INFORMATIVE AND EASY TO UNDERSTAND ON INSTALLATION, OPERATION, SAFETY PRECAUTIONS, MAINTENANCE, SERVICE, AND COMPLAINT RESOLUTION PROCEDURES.

A unique opportunity exists at time of sale for the manufacturer and retailer to communicate substantive information to the consumer. Accordingly:

26 RECOMMENDATION 7
RETAILERS SHOULD ENCOURAGE THEIR SALES PERSONNEL TO STRESS THE IMPORTANCE TO THE BUYER OF PROPER PRODUCT USE AND CARE, AS OUTLINED IN HIS OWNER MANUAL.

27 IV. AFTER SALE ACTIVITIES

Despite the most conscientious efforts by manufacturers, product failures will inevitably occur. Systems must exist, therefore, to assure the consumer prompt, honest, and competent product repair.

Adequate maintenance and repair of products after sale are primarily dependent on the availability and quality of service technicians:

29 RECOMMENDATION 8
MANUFACTURERS, TRADE ASSOCIATIONS, AND EDUCATORS SHOULD TAKE STEPS TO IMPROVE SERVICE PERSONNEL JOB STATUS.

Service technicians are often viewed as lower level employees engaged in dirty, unrewarding work. This attitude must be changed if the technician shortage is to be reduced.

Unnecessary and artificial requirements for servicing positions also reduce the available supply. Accordingly:

30 RECOMMENDATION 9
SERVICE PERSONNEL JOB PREREQUISITES SHOULD BE BASED ON TRAINING AND EXPERIENCE WHICH REFLECT THE ACTUAL SKILLS AND APTITUDES REQUIRED.

Page

Vocational education has for many years been a primary source for new applicants in the service professions. To maximize vocational education benefits:

RECOMMENDATION 10 — 32

MANUFACTURERS AND TRADE ASSOCIATIONS SHOULD EXPAND EFFORTS TO ASSIST VOCATIONAL EDUCATION PROGRAMS TO ASSURE THAT TRAINING IS DIRECTLY RELATED TO FUTURE JOB OPENINGS.

Many manufacturers and trade associations operate service personnel training programs. Their activities need to be intensified:

RECOMMENDATION 11 — 33

MANUFACTURERS AND TRADE ASSOCIATIONS SHOULD PLACE HIGH PRIORITY ON THE EXPANSION OF QUALITY SERVICE PERSONNEL TRAINING PROGRAMS.

Some companies and trade associations have also initiated programs which go beyond training to the certification of service personnel as qualified to carry out their responsibilities. These programs provide information which the consumer can use to recognize qualified service personnel, and they also improve skill levels and raise job status. Therefore:

RECOMMENDATION 12 — 35

MANUFACTURERS AND TRADE ASSOCIATIONS SHOULD ESTABLISH SERVICE PERSONNEL CERTIFICATION PROGRAMS.

As another method for improving the quality of product servicing:

RECOMMENDATION 13 — 36

BUSINESSES SERVING THE CONSUMER MARKETPLACE SHOULD JOIN, SUPPORT, AND ASSIST BETTER BUSINESS BUREAUS.

Notwithstanding action by local Better Business Bureaus and other private organizations, and despite technician certification programs, incompetent and deceptive practices often cannot be controlled except through government action. To curb these practices:

RECOMMENDATION 14 — 38

MANUFACTURERS, TRADE ASSOCIATIONS, AND OFFICIALS AT ALL LEVELS OF GOVERNMENT SHOULD COOPERATE IN THE DEVELOPMENT OF A UNIFORM STATE LAW FOR LICENSING AND REGULATING SERVICE FIRMS.

Page

A uniform system is necessary to prevent the duplication and cost to consumers and manufacturers which is likely if many different licensing laws are adopted by state and local governments.

Businesses and trade associations should take the lead in establishing voluntary guidelines regulating their repair and service practices. Each industry needs its own set of guidelines, but some general principles are broadly applicable. They are included in the following Code.

39 **CODE OF RESPONSIBLE SERVICING PRACTICES**

1. Customers should be offered an estimate of cost in advance of services to be rendered.
2. Customers should be promptly notified if service appointments cannot be kept.
3. Only repairs authorized in writing by the customer should be performed, except where other arrangements have been made to the customer's satisfaction.
4. A written, itemized invoice for all parts, labor, and any other charges, should be given to the customer upon completion of the work.
5. All repair services should be guaranteed for a reasonable length of time.
6. Appropriate records of services performed and materials used should be maintained by the service company for at least one year.
7. Service technicians should not be paid on a basis that is contingent upon the size of the customer's repair bill.
8. The service dealer should maintain insurance coverage adequate to protect the customer's property while it is in his custody.
9. Service dealers should cooperate with consumer protection agencies at all levels of government to insure satisfactory resolution of customer complaints.
10. Customers should be treated courteously at all times, and all complaints should be given full and fair consideration.

Page

Consumer complaint surveys generally indicate that as many as 15 to 20 percent of complaints are directly related to dissatisfaction in the handling of replacement parts. To reduce these figures:

RECOMMENDATION 15 41
PRODUCTION AND DELIVERY OF REPLACEMENT PARTS SHOULD BE GIVEN MAJOR EMPHASIS IN THE MANUFACTURING AND DISTRIBUTION PROCESSES.

All manufacturers should specify procedures for resolving consumer complaints. If, for example, a dealer is unable or unwilling to resolve a complaint, the consumer should be able to obtain a review of his problem from the manufacturer. If the consumer continues to be dissatisfied, voluntary arbitration systems can be employed. A number of firms are now using this approach with success. Accordingly:

RECOMMENDATION 16 44
BUSINESSES SHOULD SUPPORT INDEPENDENT, THIRD-PARTY COMPLAINT SETTLEMENT PROCEDURES SUCH AS MEDIATION AND ARBITRATION FOR RESOLVING CONSUMER DISPUTES, ESPECIALLY IF OTHER VOLUNTARY MECHANISMS HAVE BEEN TRIED WITHOUT SUCCESS.

As another approach to complaint resolution, association involved in the appliance industry have established a Major Appliance Consumer Action Panel of individuals from c 'side the industry, who have volunteered to review and resolve complaints. The success of their activities suggest that:

RECOMMENDATION 17 46
TRADE ASSOCIATIONS SHOULD SEEK TO COORDINATE INFORMATION ON SERVICE PROBLEMS FOR THEIR INDUSTRIES, INCLUDING THE ESTABLISHMENT OF INDEPENDENT COMPLAINT RESOLUTION MECHANISMS.

Government agencies are also used by consumers as avenues for redress. Responsible businesses should cooperate with government agencies to assist wherever possible in the fair disposition of consumer problems. Therefore:

RECOMMENDATION 18 46
MANUFACTURERS SHOULD ESTABLISH DIRECT RELATIONSHIPS WITH CONSUMER PROTECTION AGENCIES TO ASSIST IN RESOLVING CONSUMER PROBLEMS WITH PRODUCT PERFORMANCE AND SERVICING.

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Foreword

This report has been prepared by the Sub-Council on Performance and Service of the National Business Council for Consumer Affairs. The Council includes over 100 business leaders and was established by executive order by President Nixon on August 5, 1971 to advise the Federal government on actions which would benefit consumers.

At its first meeting on August 5, 1971, the Council adopted a mission statement pledging it to: "foster activities which assure value, satisfaction and safety in the goods and services provided to consumers." Specifically, this includes an attempt to "identify and examine existing and potential consumer problem areas; seek pragmatic solutions; develop programs benefitting consumers; and advise the Federal government whenever appropriate." Seven Sub-Councils were established to carry out these tasks.

In seeking to satisfy these objectives, the Sub-Council on Performance and Service chose as its highest priority the development of recommendations for reducing buyer complaints about the performance and servicing of consumer durable goods. Specific activities occuring before, during, and after sale of these products were examined, resulting in the analysis and recommendations found in this report.

The Sub-Council has attempted to reach conclusions and recommend action acceptable to all members. This report, therefore, represents a general consensus of the members, but all statements included are not necessarily supported by all members with the same degree of conviction.

I. Introduction

"... no group of products better reflects the material status of the typical American family than consumer durables..."

Perhaps no group of products better reflects the material status of the typical American family than consumer durables —automobiles, large and small appliances, televisions, radios, and phonographs. As Figures 1 and 2 show, ownership of these goods is now at a very high level. For example, nearly one billion appliances and over 95 million passenger cars are currently in use. In addition, more than 100 million appliances and 10 million new automobiles are sold each year.

Paralleling the increase in consumer use of these products is the rise in their performance capability and, necessarily, in their complexity. The single speed wringer washer has been superseded by automatic washers with a variety of washing cycles. Automatic defrosting refrigerators with automatic ice-makers are becoming common, as are kitchen ranges with self-cleaning ovens. Automobiles also carry an increasing array of performance options which reflect consumer preferences. In the 1972 model year, 91 percent of the new cars sold had automatic transmissions, 85 percent power steering, 68 percent power brakes, and 68 percent air conditioning.

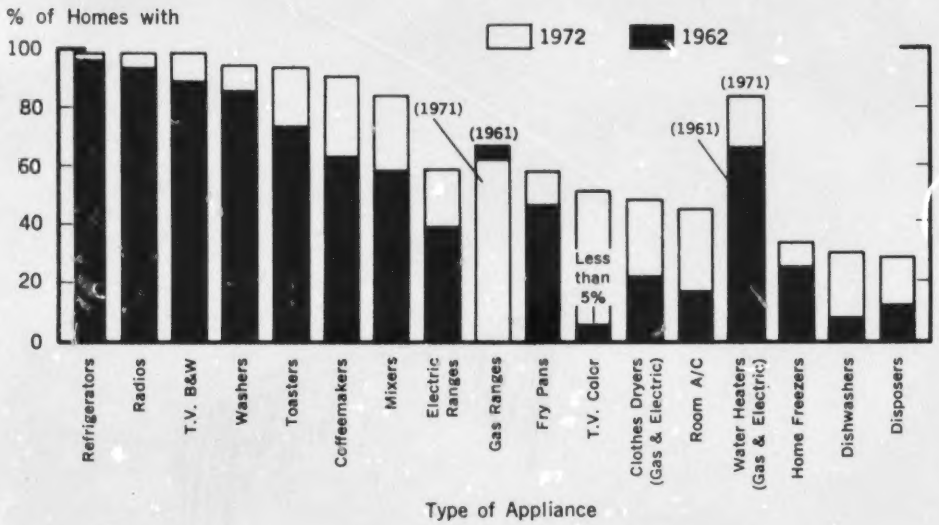
Years ago, when the average consumer owned only a car, a radio, a washer, and a refrigerator, his need for repairs may have seemed low. He had few products which could require repair, and even when repairs were necessary, the relative simplicity of the products frequently made the jobs easy. As a result, consumers often did their own repair work.

Today, however, a consumer may be surrounded by two or more cars, a boat, washers for dishes and clothes, several radios and television sets, gasoline or electric lawnmowers, power tools, air conditioners, and combination refrigerator-freezers. The variety of these devices, and their degree of technical sophistication, prevents the vast majority of consumers from successfully completing all but the most simple repairs. Instead, to keep his products operating, the consumer must consult and contract with a variety of dealers, manufacturers, and service organizations. And if one major product fails, his dependence on it can cause a major inconvenience. If repairs cannot be completed promptly and competently, the resulting frustration can easily lead to general dissatisfaction with the performance and servicing of all consumer durable products.

"... to keep his products operating, the consumer must consult and contract with a variety of dealers, manufacturers, and service organizations."

Figure 1

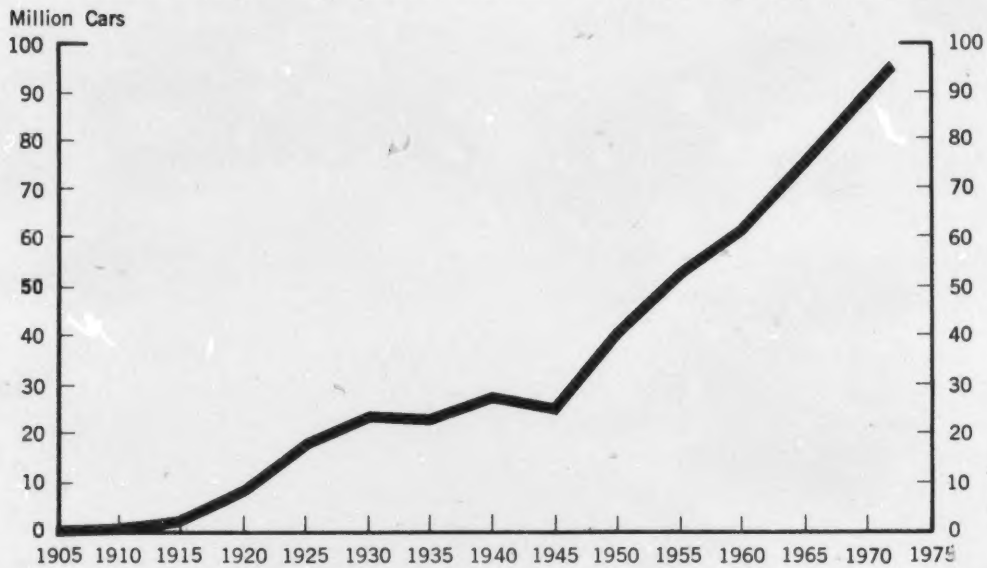
MAJOR APPLIANCE OWNERSHIP GROWTH 1962–1972



Source: "Merchandising Week"— 1973 Statistical & Marketing Report, P.P. 30, 38 and Bureau of the Census.

Figure 2

PASSENGER CAR REGISTRATIONS IN THE UNITED STATES



SOURCE: Motor Vehicle Manufacturers Association 1971 and 1972 Automobile Facts & Figures (U.S. Department of Transportation)

Recent public opinion polls indicate the current extent of consumer concern. A 1971 nationwide Louis Harris study commissioned by *Life* magazine entitled 'Consumerism at the Crossroads", reported that:

- 36 percent of the respondents believed they were overcharged by a repairman on a product which had broken down;
- 46 percent classified repair service for appliances as being shoddy and unreliable;
- only 34 percent were confident of the honesty and fairness of garage and auto repairmen;
- only 42 percent had confidence in radio-TV repairmen;
- 68 percent agreed with the statement "What's needed is not so much better products as better servicing and warranties when you get a lemon.";
- 69 percent felt it would be a good idea for a government agency to license all repairmen and people who service products.

The Harris-*Life* survey conducted in February 1972, "Consumerism II," found the following:

- 40 percent of the respondents expected difficulty in obtaining repairs for their automobiles and 34 percent for television sets.
- 31 percent believed auto repairs were made improperly, up from 16 percent in 1967.

While the failure rate of most devices is lower today than in years past, even a low percentage figure spread across the millions of items now in use results in a very large number of complaints to manufacturers, dealers, service agencies, and public and private consumer protection organizations. No matter where complaints are first directed, manufacturers are usually blamed for product sales or service deficiencies. These difficulties represent real and legitimate problems for many consumers and positive steps should be taken to help resolve them wherever possible.

"No matter where complaints are first directed, manufacturers are usually blamed for product sales or service deficiencies."

The aim of this report is to outline actions before, during, and after product sale which will assist in the reduction of these consumer complaints. Many businesses are responding to consumer demands, and the particular programs they employ have been used in preparing this report. Other actions, by trade associations, government, and consumers, can also be helpful and they are included along with the recommendations to individual businesses.

II. Before Sale Activities

Designing and Producing Products to Meet Consumer Demands

DESIGN Decisions made and actions taken during the design or first stage of a product's life are essential to the reduction of consumer complaints about performance and servicing. Indeed, the success of nearly every other activity aimed at complaint reduction is heavily dependent upon the extent to which the following characteristics have been designed into the final product:

- *reliability*, or the continued capability of the product to perform its intended function to the satisfaction of the customer throughout the useful life of the product.
- *durability*, or the ability of the product to withstand normal use by the customer throughout its useful life.
- *serviceability*, or the ease with which the product can be repaired.
- *performance capability*, or the capability of the product to perform its intended function to specified levels.
- *producibility*, or the ease with which the product can be produced.

In making design decisions involving these factors, manufacturers and their design staffs are constrained by a fundamental aspect of the mass production process. Despite the characteristics of any given design, no two mass produced component parts, sub-assemblies, assemblies, or final products are likely to be the same in every respect. In fact, mass production itself is made possible by the ability to design products in such a way that individual part variations can be accomodated, without detriment to overall product performance, to the extent they fall within specified "tolerance limits." These limits cover all properties of parts and materials—dimensions, strength, chemical composition, surface condition, color, etc. Similarily, when people are factored into the process, unavoidable differences in performance and reliability will occur.

"... no two mass produced . . . products are likely to be the same in every respect."

As production variations impose limitations on design, so too do differences in user or consumer demand. All users do not place identical demands on a product. In the case of auto-

mobiles, for example, one driver may accelerate slowly, another rapidly. And even under the most stable conditions, there are variations in the use environment. The line voltage available to any electrical appliance varies seasonally and with the time of day. The temperature and humidity history of two television sets will vary widely in customer use, as will the number of times the channels are changed or the sets switched on and off.

"... the capabilities of manufactured units differ, and these units are subjected to differences in user demand."

The net result is that despite the existence of a carefully specified product design, the capabilities of manufactured units differ, and these units are subjected to differences in user demand. Thus, the basic problem facing the manufacturer is to recognize and adjust to this probabilistic situation in the production and use of his products. That is, when considering any characteristic of an individual product, the actual capability built into it and the actual demands placed on it by the user cannot be predicted or correlated with absolute certainty. The manufacturer and his designer must, therefore, treat product capability and use as probability distributions.

Figure 3 presents a typical product probability distribution for production and use. As shown by the position of the product capability curve, the manufacturer is usually able to produce a product that exceeds customer demands. However, as indicated by the shaded area where the two distributions overlap, a very small portion of products are produced which may malfunction when higher than anticipated demands are placed on them by consumers. The manufacturer's challenge is to reduce the probability of malfunction. He usually has little or no control over the use environment, so he must concentrate on the product capability distribution. Figures 4 and 5 show his two options.

"The manufacturer's challenge is to reduce the probability of malfunction."

The manufacturer can reduce his allowable tolerances in an attempt to make each unit more nearly identical, as shown in Figure 4. This would be possible for example, by investment in tighter process control, more precision machining, stricter quality control, or more stringent material specifications. Or he can increase the capability of the product, thus shifting the capability distribution curve to the right as

Figure 3

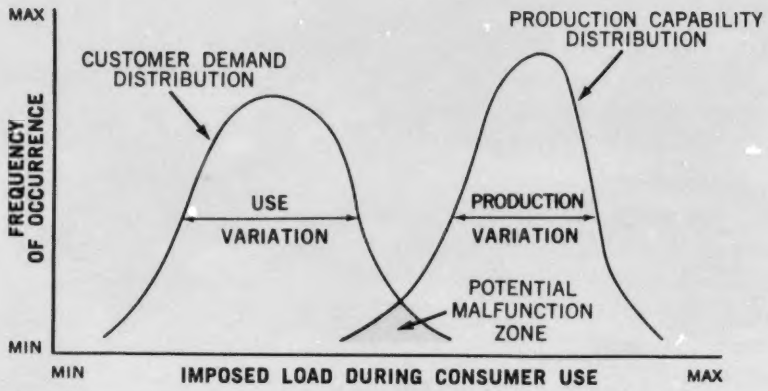


Figure 4

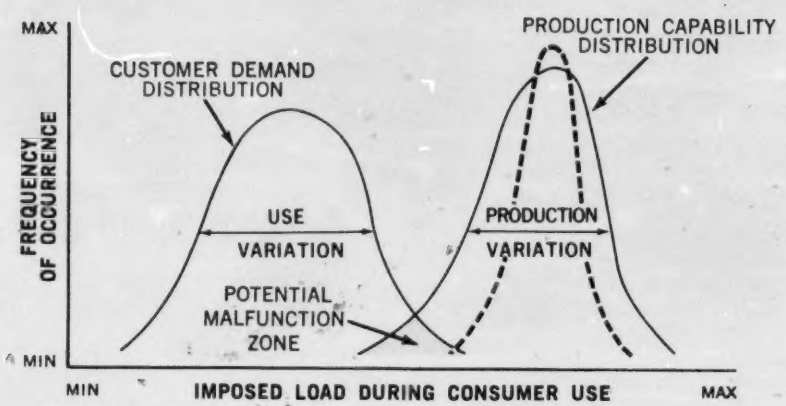
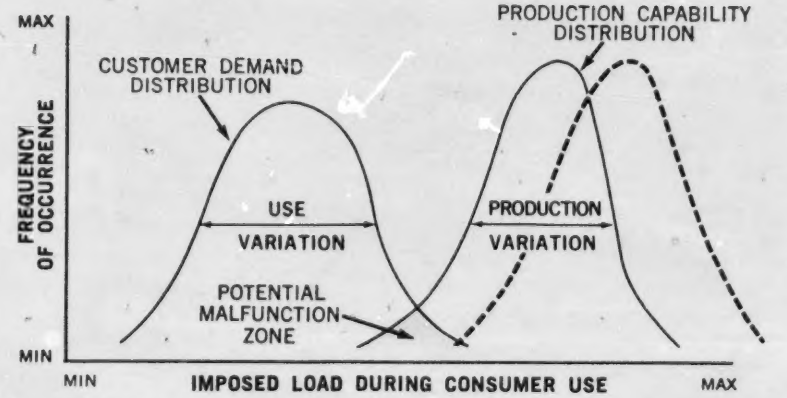


Figure 5



in Figure 5. This can be accomplished by use of a more effective design, more or better material, or by incorporating redundant parts.

It is in the manufacturer's interest to avoid making products that contain any defects since they result in consumer frustration, loss of sales, warranty expenses, or in some cases, litigation and product liability awards. But since it is also true that costs may increase substantially as perfection, or "zero defects" is approached, these final improvements may be prohibitively costly to attain under competitive market conditions. A nearly "defect-free" appliance can be produced, but at a price which few, if any, consumers would pay. However, if the quality and reliability of the product are too low, the total life-cycle product costs will be excessive for both the manufacturer and his customers.

While dealing with these statistical distributions across his production units, the manufacturer must also recognize that each consumer is an individual, buying an individual unit, and that the total system of sale and service should be designed to assure that every customer receives fair value for the price paid. If a defective product is purchased, a prompt and effective system should be in place to make the necessary corrections.

"... the total system of sale and service should be designed to assure that every customer receives fair value for the price paid."

The implications of this discussion are clear. There is always some possibility that defects and breakdowns will occur and each manufacturer should have an efficient and effective system for correcting them. Prompt, honest, and competent service must be provided each product user to produce individual satisfaction in each case. Chapter 4 of this report contains several suggestions for developing such a service system, while several methods which manufacturers can use to lower their defect rates are described in the remainder of this chapter.

PRODUCT ASSURANCE

The label commonly applied to the system used to limit product defects is "product assurance." It includes all activities conducted by the manufacturer to assure that

products, as used by customers, conform with realistic performance, durability, reliability, and serviceability goals. This involves activities in purchasing, engineering, manufacturing, servicing, and other departments, and is thus much broader than the traditional quality control function. The existence, extent, and effectiveness of a total product assurance system—the activities that determine the actual quality and reliability of the product delivered to the buyer—are among the most basic policies determined by management. Tangible day-to-day decisions, such as providing sufficient inspectors, keeping equipment in good repair, using reliable components, shutting down production lines when quality levels cannot be maintained, and providing responsive answers to customer complaints, are all indications of management's commitment to product assurance. Written guidelines can be most helpful in demonstrating management's demands in these areas to all employees. The Sub-Council therefore recommends:

"(product assurance activities) are among the most basic policies determined by management."

RECOMMENDATION 1

MANUFACTURERS SHOULD MAINTAIN AND ENFORCE UP-TO-DATE WRITTEN POLICIES AND PROCEDURES ON PRODUCT QUALITY AND RELIABILITY.

Only when management consistently and systematically acts to improve quality and reliability will the entire organization respond positively to these goals. As the costs of warranty reimbursement, product service, loss of sales due to consumer disaffection, and other less quantifiable costs continue to rise, more and more companies have revised their total product assurance systems as suggested by the above recommendation. We believe *all* manufacturers should do so.

Product Assurance System Elements

No single measure exists that management can adopt to assure that a product achieves specified levels of reliability, quality, serviceability, or other properties. Rather, the innovations required are changes in organization and operating methods which reflect the systematic nature of product assurance. The changes necessarily vary between

firms and products, but in all cases, they involve measures that are mutually supporting of each other. By so doing, they close the gaps and minimize overlap in the total product assurance system. The major activities which comprise such a system are shown in Figure 6.

Figure 6

MAJOR ELEMENTS OF A TOTAL PRODUCT ASSURANCE SYSTEM

A. DEVELOPMENT OF PRODUCT QUALITY AND RELIABILITY

- Definition of consumer's use and environment of the product
- Development of validation methods simulating use (standards)
- Use of past product field and manufacturing information as problem prevention guide
- Problem identification, reporting, correction (closed loop system) in development phase
- Analysis of failed parts from field
- Establishment of reliability objectives and serviceability requirements
- Inputs and design review by manufacturing, quality control, processing, cost control, purchasing, and service; applied to both new designs and design changes
- Analysis for likelihood and consequences of failure (failure mode analysis)
- Identification and specification of controls in design of features critical to
  - Safety
  - Reliability
  - Quality
- Recognition of, and making provisions to account for, manufacturing variations
- Review of design validation requirements, including
  - Number of units to be tested
  - Type of material relative to production material
  - Length of test period (time, cycles)

B. PRODUCT QUALITY PLANNING AND CONTROL

- Development of plans to assure that critical performance characteristics of the product are maintained through
  - Processing
  - Inspection
  - Functional test
  - Developing a program for reviewing quality and reliability aspects of product design

- Review of field service feedback to identify quality and reliability deficiencies
- Tool and guage control
  - Calibration
  - Preventive maintenance and replacement schedules
- Optimization of quality control plans considering
  - Automatic inspection capabilities
  - Process control effectiveness
  - Criticality of features
  - Sampling audit techniques
- Establishment of methods for identification and correction of production quality problems
  - Scrap
  - Rework
  - Deviations from design specifications
- Training of inspection and quality control personnel
  - Managers and supervisors
  - Technicians

C. PROCESS QUALITY PLANNING AND CONTROL

- Validation of process capabilities
- Matching of process controls and instrumentation to process capabilities
- Development of a program to review the product to assure it is buildable
- Establishment of continuous or periodic check of process capability
- Training of process control engineers and technicians

D. SUPPLIER QUALITY EVALUATION AND CONTROL

- Development of methods for audit and appraisal of vendor performance
- Establishment of quality requirements, sampling plan, and rejection arrangements
- Assuring all requirements are specified to vendors and that vendors acknowledge their understanding and acceptance of these requirements

E. CUSTOMER INFORMATION

- Establishment of product information plan for use at the point of sale
  - Product capabilities and limitations
  - Service and warranty provisions

F. FIELD EVALUATION, CONTROL, AND FEEDBACK

- Establishment of system for continuous evaluation of product performance in customer service

- Development of methods for routine and priority information feedback
  - Product performance
  - Failure reporting
  - Servicing problems (frequency, accessibility, parts availability)
  - Provide feedback on results of corrective action

The list highlights the major individual components of a total product assurance system, but the real challenge to management is to structure and integrate the organization and tasks, and draft the appropriate policies and procedures, to assure that employees at all levels conform with management's product assurance goals.

The aim of such a system should be to transfer the costs of separating badly produced units from the good, and the high failure costs resulting from inadequate quality and reliability, into the cost incurred to prevent occurrence of defects—with a final objective of reducing the total product assurance costs. A typical response to high cost resulting from defects appearing in products already in the consumer's hands is to inspect more heavily to preclude shipment of defective goods. This can increase scrap and inspection costs, but it may not correct the basic causes of defective production. The incentive to management is clear: reduce product assurance costs and enhance customer satisfaction by spending the product assurance dollar more effectively.

"The incentive to management is clear: reduce product assurance costs and enhance customer satisfaction by spending the product assurance dollar more effectively."

Product Engineering

Traditionally, engineering groups have placed heavy emphasis on creating products which provide required performance functions, are attractive, and are economical to manufacture. Today, the degree to which firms augment these major criteria with additional consumer-oriented criteria, such as reliability and serviceability, is a measure of company commitment to meet the challenge of rising consumer expectations. One method employed for assuring consideration of vital consumer interests at the very beginning of the product development cycle is the establishment of a reliability engineering function within the product engineering department. In some firms this has been accom-

plished by the creation of completely new units. In others, reliability is explicitly assigned to the design engineer.

The reliability engineering tasks involved, by their very nature, reflect consumer needs and expectations, for example:

"The reliability engineering tasks involved, by their very nature, reflect consumer needs and expectations . . ."

- Design for serviceability
- Development of product tests that correspond to consumer use patterns
- Analysis of past and current field problems
- Analysis of total product life costs
- Review of manufacturing capabilities
- Standardization of parts
- Analysis of failed parts
- Establishment of quantitative failure rates
- Predictive analyses for the likelihood and consequences of failure.

These are significant activities in corporate systems which seek to meet consumer needs. Because of their basic importance, the Sub-Council recommends:

RECOMMENDATION 2

MANUFACTURERS SHOULD ESTABLISH A RELIABILITY ENGINEERING RESPONSIBILITY AS A PRIORITY ACTIVITY IN THE DESIGN AND MANUFACTURING SEQUENCE.

Two reliability engineering tasks deserve special mention. The first is the need to preestablish quantitative standards for the service conditions the product will encounter. These are reference points against which design criteria can be quantified, and the problems encountered in the field can be measured.

The second task is the establishment of a strong information link between product engineering and field service data, such as warranty service reports, customer and dealer contacts, and insurance or legal claims. These should be fed back to design and production personnel. Some of this information can be relayed through simple tabulations of the records of service outlets. In some cases special product defect reports completed by field service personnel can help to quickly notify

the factory that repetitive defects have been found. Other information systems can measure service against the sales base to indicate when defects are excessive.

A new program designed to achieve rapid correction of product defects has recently been announced by the American Gas Association and the Gas Appliance Manufacturers Association. Known as the Gas Appliance Improvement Network (GAIN), the program utilizes appliance service reports of 50 gas utilities in widely separated, high density, population areas throughout the country. These "reporting" utilities forward reports to 18 "contact" utilities who provide personal liaison with the concentrations of manufacturers of appliances in their area. Each of the contact utilities, who also serves as one of the 50 reporting utilities, analyzes the reports to determine patterns or trends of deficiency or error in production, design, performance, or installation of appliances. When appropriate, the contact utility assists the manufacturer in the development of a solution to problems identified by the network. Participation by the gas utilities and appliance manufacturers is wholly voluntary.

Product Standards and Design

Popular terminology uses the word "standard" to encompass several basic elements, singly or collectively. These include:

A. Quantified values of product characteristics.

B. Maximum and/or minimum values for the characteristics.

C. Standard test methods to reliably compare actual products with their standards.

Establishment of product standards within the company is one noteworthy influence of reliability engineering. These standards become benchmarks for measuring product performance and reliability characteristics and serve as basic design requirement inputs. In addition, in simplified form, these standards can be used by the consumer to evaluate the performance, quality, reliability, and service characteristics of products according to his own individual needs.

All mass produced goods are covered by design standards which make possible their production in quantity. Typically, these standards are specific to the model and proprietary to the manufacturer, but such trade associations and professional societies as the Society of Automotive Engineers, the Gas Appliance Manufacturers Association, and the American National Standards Institute have recommended standards which have been voluntarily adopted by other producers on an industry-wide basis. These standards permit interchangeability among products and product components, and enable consumers to purchase fuses, light bulbs, automobile wheels, and countless other products and components with assurance that they will be compatible with their intended use.

"All mass produced goods are covered by design standards which make possible their production in quantity."

Company standards can improve product serviceability and reliability by setting minimum design criteria and performance levels, by promoting consideration of product safety characteristics during product design, and by reducing proliferation of parts. The Sub-Council therefore recommends:

RECOMMENDATION 3
MANUFACTURERS SHOULD PROMOTE THE DEVELOPMENT AND USE OF CORPORATE PRODUCT STANDARDS.

These activities are of major importance to consumers, and they deserve to be encouraged within the corporate structure.

Manufacturing and Quality Control

Manufacturing and quality control programs which have proven useful in reducing customer complaints have frequently evidenced one or more of the following characteristics:

- Heavier emphasis on pre-production review and acceptance of new product designs by manufacturing, quality, and service groups.
- Greater effort to make suppliers part of the product quality team.
- Increased stress on attaining better product reliability.
- Separation of the quality assurance responsibility from production and quality control, and giving quality assurance officials authority to stop shipment of finished products when standards are not being met.

- Heavier dependence on feedback from the field to correct product problems.

Pre-production acceptance of new products is being placed on a more formal basis by companies which have established review boards of senior operating officials. The boards have authority to stop introduction of a new product unless safety, performance, reliability and producibility standards have been met. Inputs from manufacturing, process engineering, industrial engineering, cost accounting, quality and reliability assurance, and service are used by the boards in their decision-making process. An important aspect of their deliberations is to make certain the design under consideration incorporates the latest thinking in all areas to reduce the number of running changes after a product has been introduced. This permits production lines to reach output rates and quality goals sooner.

"Some companies have established permanent warranty cost reduction committees of senior operating officials."

Some companies have established permanent warranty cost reduction committees of senior operating officials who represent product engineering, production, quality and reliability assurance, purchasing, cost accounting, and service. Their task is to reduce warranty claims arising from actions or inaction during the entire product design, manufacturing, and service cycle.

Still other firms are trying to build a better product by using the knowledge dealers and distributors have of customer needs and likely operating conditions. One firm has brought together a group of service specialists to inspect and evaluate products with respect to their conformity to established serviceability guidelines. As a result the company has noticed an increase in consumer goodwill and in sales, as well as improved in-plant productivity and reduced production line repairs.

Another firm has formed a council of service technicians who are authorized to make recommendations on any aspect of product development, engineering, production quality assurance, service or parts which might help improve the quality and reliability of its products and product operation. On the subject of quality assurance, for example, members will be invited to comment on: (1) "out of box" product

quality; (2) long term product reliability; (3) performance characteristics; and (4) the durability of products under field conditions.

Review boards, warranty committees, and service technician advisory groups can become important factors in a manufacturer's total product assurance system. They demonstrate management's commitment to improving quality and reliability, and they see that the product assurance system is continually being reviewed and evaluated by appropriate personnel. Accordingly, the Sub-Council recommends:

RECOMMENDATION 4

MANUFACTURERS SHOULD ESTABLISH ADVISORY BODIES OF CORPORATE AND SERVICE PERSONNEL TO CONTINUALLY REVIEW AND MONITOR PRODUCT ASSURANCE SYSTEMS.

Greater efforts are also being made by some manufacturers to make suppliers of components and materials a part of the product quality team. Periodic reviews are held with supplier engineering, quality, and reliability personnel to help the supplier more fully understand the application to be made of his component and the environment in which it must work, and to help assure the manufacturer that his application is within the capabilities of the component ordered.

Reliability testing activities have also been expanded by manufacturers on components and finished products in environments simulating user conditions. The information from these tests—obtained under controlled conditions, as the consumer might use the equipment—is supplied to designers, resulting in improved design reliability and better assembly and component reliability.

As the final step before shipment, some producers of expensive products conduct a 100 percent inspection of critical functional characteristics. A number of firms have also added an audit for performance characteristics to achieve greater control of the product's conformance to design. The audit covers one to two percent of the total finished products and is followed by an operational test under controlled conditions. The aim of the audit, and the potential key to its success, is rapid feedback to the quality and production management. Multiplant operations producing consumer durable products

"... some producers of expensive products conduct a 100 percent inspection of critical functional characteristics."

can be brought under effective uniform control by the use of such an audit if identical standards and reporting methods for all plants are made a part of the system.

These are some of the devices and techniques that have proved to be effective in upgrading product quality. They deserve careful consideration by all manufacturers to be sure that the causes for legitimate consumer complaints are reduced to minimum levels.

TRANSPORTATION

As the consumer's demand for a wider variety of goods has increased, transportation of parts and final products has become an essential ingredient of the manufacturing and distribution process. Transportation difficulties, such as lost and damaged goods and shipping delays on replacement parts, often lead directly to consumer complaints. Several factors can be cited as contributors to these problems, i.e. industry rate structures, competitive conditions between different transportation modes, and labor conflicts. These subjects are far too complex to be adequately treated here, but there are some narrower problems and issues which led themselves to action by individual firms.

"One basic problem is the high cost of transportation for small shipments, e.g. replacement parts."

One basic problem is the high cost of transportation for small shipments, e.g. replacement parts. In most major cities, this is caused by the existence of numerous terminals which result in a wasteful duplication of services. Many of these terminals are operated below capacity; some lack modern handling equipment.

Economies of scale are possible when small shipments are consolidated in strategically located terminals. Today there are approximately 130 shipper cooperatives, composed of groups of shippers, who combine small shipments into carload lots thereby obtaining significant reductions in freight rates. Manufacturers should examine whether terminal consolidation could yield similar beneficial results to themselves and their customers.

Management recognition of the interrelationships be-

tween transportation and other costs of production can lead to substantial cost savings for consumers. For many executives, transportation merely means moving raw materials into production plants and distributing finished goods to customers. But the actual movement of goods and materials is only part of the setting; other factors are also involved. For example, inventory and warehousing costs are a function of transportation. Through the use of transportation, inventory levels can be reduced if the movement of goods is coordinated with accurate sales forecasts and production schedules.

One action being taken by some manufacturers to help assure appropriate consideration of transportation costs is the raising of the corporate traffic manager's job to the top management level. In this position the traffic manager is better able to achieve the best cost and service combination between transportation and purchasing, product design, manufacturing, warehousing inventory control, processing orders, and packaging.

The rising rate of loss and damage to goods in transit is another major transportation problem. Between 1960 and 1970 the claims paid by rail, motor, and air carriers increased more than 20 percent. Though firm figures are not available, the damage to consumer durables in transit amounts to many millions of dollars annually. One way to reduce the incidence of this loss is to replace manual handlings with mechanical handlings wherever possible. One of the most effective ways to accomplish this at present is by use of a containerization plan for less-than-truckload traffic. Interlining, the process by which two or more carriers transport a shipment, is one of the principlal causes of loss and damage. With containers, instead of handling shipments piece by piece, carriers can exchange container loads, and loss rates are minimized.

"The rising rate of loss and damage to goods in transit is another major transportation problem."

To date, the principal applications of containerization have been in air freight, where containers reduce aircraft turn-around time, and in ocean freight, where handling costs provide strong incentives for investment in containerization systems. Consumer complaints about lost and damaged goods amount to strong incentives for the motor carrier industry to examine the feasibility of developing a containerization program for less-than-truckload traffic.

III. During Sale Activities

Matching Product Capabilities With Consumer Needs

After careful effort to design and produce products that possess the qualities described in the preceding chapter, manufacturers and retailers are ready to sell them to consumers. At this point in the product's life cycle, the existence and use of two general types of information can help reduce the potential for consumer complaints. The first of these—product information—can contribute to a better match between consumer needs and ability to pay, and product capabilities. The second—use, care, and service information—can show the consumer how to operate and maintain his product to obtain good and lasting performance.

"... the existence and use of two general types of information can help reduce the potential for consumer complaints."

PRODUCT INFORMATION

Many segments of the business community are responding to consumer demands for more and better product information. Trade associations are especially active, with the Association of Home Appliance Manufacturers (AHAM), a prime example. AHAM is an association of more than 100 appliance manufacturing firms. It has developed more than a dozen product standards covering such items as electric coffeemakers, electric ranges, dishwashers, humidifiers, and household food waste disposers.

A brief examination of two of these AHAM standards suggests their potential value to customers. The room air conditioner standard is designed to establish a uniform procedure for determining the performance and rating of room air conditioners under specified test conditions. Characteristics tested include cooling capacity, moisture removal capacity, electrical input requirements and, where applicable, heating capacity. To communicate test results to consumers, AHAM administers a certification program indicating, through use of a certification seal, that a particular model's performance capabilities have been accurately stated and independently verified in accordance with the Association's standard. An independent testing laboratory is retained by AHAM to administer the testing of models and verification of data. Although these programs are voluntary, every room air conditioner sold in the United States, including imports, is certified by AHAM.

For those products which are certified, the AHAM standard and certification program for household refrigera-

tors and freezers provides data consumers need to make better informed buying decisions. The standard specifies procedures for testing the following product characteristics: net general refrigerated volume, net freezer volume, net refrigerated volume, and net shelf area. The certification program assures consumers that measurements have been made in the same manner by all participating manufacturers and that the values have been independently verified and are honestly presented in all advertising and point-of-sale materials.

As another example of business activity in this area, the Society of Automotive Engineers and the American Society for Testing and Materials have developed an Automotive Gasoline Performance and Information System to provide a set of consumer-oriented performance standards for automobile gasolines. The system involves a group of easy to understand symbols that indicate to the consumer the characteristics of the given product and the level of its performance regardless of season or location. Automobile manufacturers are expected to include the appropriate gasoline symbol for each of their future models in owner's manuals.

These efforts indicate a growing recognition of the necessity for producing easily understood and comparable information on consumer durable products. However, despite commitments from private and public groups, many problems remain to be solved. Chief among them are the following:

"These efforts indicate a growing recognition of the necessity for producing easily understood and comparable information on consumer durable products."

- *First*, a consensus must be reached on the characteristics which should be measured for each product. The primary criteria here should be whether consumers will generally recognize a given characteristic as a meaningful indicator of product capabilities.
- *Second*, standard methods will have to be developed and generally accepted for testing each characteristic to assure that products are evaluated on a fully comparable basis.
- *Third*, the test results for individual products must be readily available to the consumer in an understandable and useful manner.

In the near future The Association of Home Appliance Manufacturers is planning to announce a new program which suggests one way these three problems could be solved for its industry. AHAM has developed guidelines for *Recom-*

mended Fact Lists for major appliances, containing items which AHAM members believe are of basic importance to the consumer. Wherever possible the guidelines suggest including performance data certified by AHAM. The end result is a fact list which will accompany each major appliance in a form which the manufacturer deems appropriate, e.g. sticker, label, tag, or pamphlet. The guideline facts are to be presented first in product literature and will be differentiated from other information, particularly that which might make the individual brand or model unique. Figures 7, 8, and 9 contain the proposed guidelines for room air conditioners, refrigerators and refrigerator-freezers, and automatic washers.

Similar programs for other consumer durables may be helpful to customers. The development and success of these information programs are dependent upon the commitment of individual manufacturers to provide information on their own products and to participate in efforts, usually carried on by trade associations, which establish mechanisms for all manufacturers to provide easily comparable product information. Accordingly, the Sub-Council recommends:

RECOMMENDATION 5

WHEREVER APPROPRIATE, MANUFACTURERS SHOULD PROMOTE THE DEVELOPMENT OF MECHANISMS FOR PROVIDING CONSUMERS WITH PERFORMANCE INFORMATION ON CONSUMER DURABLES.

Trade associations have a major role in this area, but professional societies, private testing laboratories, consumer organizations, and government agencies can help to assure that appropriate product characteristics are chosen and measured in a manner fair and equitable to both manufacturers and consumers. Nevertheless, individual manufacturers will continue to have the principal responsibility for solving the difficult problems which arise in these efforts.

USE, CARE, AND SERVICE

The second type of information needed by consumers at time of sale—use, care, and service materials—shows the consumer what he should do to attain the level of performance his product is capable of achieving, and how to assure that it will be properly repaired. No firm figures exist on the number of complaints that arise because con-

Figure 7

AHAM Recommended Fact List Guideline for ROOM AIR CONDITIONERS

MODEL: (Use either model series or model number designation.)

SAFETY: This symbol on the product means it is listed by Underwriters' Laboratories, Inc.

(Use UL symbol)

A properly grounded electrical outlet of the diagrammed configuration is required for safe operation.

Outlet Diagram

(Use appropriate diagram)

_____ Volts

_____ Amperes

CERTIFICATION: This seal on the product means the capacity, watts, and amperes stated below have been certified by the Association of Home Appliance Manufacturers:

BTU/hr Cooling Capacity _____

Amperes _____

Watts _____ *(Use appropriate AHAM seal)*

BTU/hr Heating Capacity* _____

ELECTRICAL VOLTAGE REQUIRED: _____

INSTALLATION REQUIREMENTS:

(Provide a description of the minimum window size, and type of window required for installation and information on installation kit availability.)

_____

_____

CABINET DIMENSIONS:

(Inches) Height _____; Width _____; Depth _____;

Further product information at manufacturer's initiative.

* *If applicable.*

Figure 8

AHAM Recommended Fact List Guideline for REFRIGERATORS AND REFRIGERATOR-FREEZERS

MODEL(S): (Use either model series or model number designation.)

SAFETY: This symbol on the product means it is listed by Underwriters' Laboratories, Inc.

(Use UL symbol)

Grounded circuit recommended.

(Use appropriate AHAM seal)

CERTIFICATION:

AHAM certified _____ cubic feet net general refrigerated volume.

AHAM certified _____ cubic feet net freezer volume.

AHAM certified _____ cubic feet net refrigerated volume.

AHAM certified _____ square feet net shelf area.

ELECTRICAL REQUIREMENTS:

Volts _____; Amps _____.

EXTERIOR DIMENSIONS:

Height _____; Width _____; Depth (door closed) _____;*
Depth (door open) _____.*
Uncrated weight _____.

SPACE RECOMMENDED FOR INSTALLATION:

Height _____; Width _____.

DEFROST METHOD:

_____(Manual, Semi-Automatic, Automatic "Cycle Defrost," "No Frost" as defined in ANSI Standard B-38.1)

ICE-MAKING:

_____(Trays, Automatic, or Optional Automatic Add-on)

(Water connection required if automatic ice-maker**)

Further product information at manufacturer's initiative.

* *Depth measurements include handle.*
** *This notation, if applicable.*

Figure 9

AHAM Recommended Fact List Guideline for AUTOMATIC WASHERS

MODEL: (Use either model series or model number designation.)

SAFETY: This symbol on the product means it is listed by Underwriters' Laboratories, Inc.

(Use UL symbol)

A properly grounded electrical outlet of the diagrammed configuration is recommended.

Outlet Diagram

Use appropriate diagram

ELECTRICAL REQUIREMENTS:

Volts _____; Amps _____; Maximum Wattage _____.

PLUMBING REQUIREMENTS:

Stand pipe drain _____ (yes, no or check)
Drain tub _____ (yes, no or check)

DIMENSIONS:

Height _____; Width _____; Depth _____ Uncrated weight _____.

CAPACITY:

_____ lbs. (According to AHAM Standard HLW-1)

WASHING ACTION AND SPEED:

Type (Agitator or Tumbler) _____

Available speeds _____ _____ _____

MAXIMUM WATER CONSUMPTION:

Hot Water _____ Total _____

WATER FILL METHOD:

(Describe pressure or time fill) _____

_____

WATER LEVEL SECTIONS:

_____ _____ _____

WATER TEMPERATURE COMBINATIONS AVAILABLE

Wash _____ Rinse _____

_____ _____

Further product information at manufacturer's initiative.

sumers are uninformed about these matters, but most observers believe they are high. Industry efforts aimed at upgrading owner manuals to improve their readability can therefore pay large dividends in complaint reduction. To achieve this goal the Sub-Council recommends:

RECOMMENDATION 6

MANUFACTURERS SHOULD GIVE PRIORITY TO THE DEVELOPMENT OF OWNER MANUALS THAT ARE INFORMATIVE AND EASY TO UNDERSTAND ON INSTALLATION, OPERATION, SAFETY PRECAUTIONS, MAINTENANCE, SERVICE, AND COMPLAINT RESOLUTION PROCEDURES.

Depending upon the product, owner's manuals should include the following topics:

1. Installation instructions
2. Operating instructions.
3. Safety warnings.
4. A do-it-yourself repair section for simple failures, whenever appropriate.
5. A list of those parts safely replaceable by the consumer and where they can be obtained.
6. The warranty and an explanation as to where and how to get warranty service.
7. Where and when to seek service.
8. Who to call if the service agency provides unsatisfactory service.
9. An index which is as complete as possible to allow ready access to the manual's information.

When simple and complete owner manuals have been prepared, a unique opportunity exists at time of sale for the manufacturer and retailer to communicate substantive information to the consumer. The Sub-Council therefore recommends:

RECOMMENDATION 7

RETAILERS SHOULD ENCOURAGE THEIR SALES PERSONNEL TO STRESS THE IMPORTANCE TO THE BUYER OF PROPER PRODUCT USE AND CARE, AS OUTLINED IN HIS OWNER MANUAL.

Retailers should also give attention during sales force training programs to the customer's eventual need for product service and the procedures he must follow to obtain it. The next chapter suggests several ways in which service activities can be improved to increase consumer satisfaction.

IV. After Sale Activities

Responding to the Consumer

The purchase of a major household appliance, an automobile, a television set, or other durable product is a relatively rare event for a consumer. Typically, it involves the investment of a substantial amount of money and protracted payment. Accordingly, the consumer's performance expectations for these products are usually deep-seated and strongly held.

In the design and production phase of product development, the manufacturer is concerned with providing a quality product at a reasonable initial cost to the consumer. But this may be only a part of the total cost to the consumer over the life of the product, if the dollars and inconvenience associated with maintenance and repair are considered. Therefore, the manufacturer must be concerned with the consumer's sense of continued satisfaction with the product after sale.

"... the manufacturer must concerned with the consumer's sense of continued satisfaction with the product after sale."

Providing continuing, quality post-sale servicing is a difficult undertaking for manufacturers and retailers. Failure to achieve this objective can result in the following types of consumer complaints:

- *Poor quality of repair.* The continuing shortage of trained service technicians has often resulted in ineffective and inefficient product servicing and repair.
- *Unethical business practices.* Although most product service businesses are reputable, some firms are dishonest or incompetent in ways which are difficult for the consumer to detect.
- *Inordinate delays.* Unavailability of parts, too few service technicians, and product complexity lead to consumer complaints about repair delays.
- *Impersonal response to complaints.* Consumers rightfully expect solutions to be found for their individual problems, and this is not alway forthcoming.
- *Inadequate information on available avenues for recourse.* Frustration stemming from the consumer's inability to quickly identify after sale responsibility for service can be the source of serious problems.

"Even the basic needs for an adequate product service activity are complex and expensive to establish."

Providing for all the elements needed for effective post-sale relationships with consumers is a demanding and complex process. Even the basic needs for an adequate product service activity are complex and expensive to establish.

The manufacturer's role in satisfying the consumer after the sale is complicated. The manufacturer often has little or no direct control over events and often lacks direct contact with the customer during and after sale. Service is frequently provided by dealers or by independent service facilities which are difficult to influence under existing legal constraints. However, brand name identification leads the consumer to hold the manufacturer to account when malfunctions occur.

"... brand name identification leads the consumer to hold the manufacturer to account when malfunctions occur."

This is a complicated setting for manufacturer action, but there are a number of steps which can be taken in the consumer's interest, as outlined below.

SERVICE PERSONNEL RECRUITMENT AND TRAINING

Adequate maintenance and repair of products after sale is primarily dependent on the availability of qualified service technicians. Although the manufacture and sale of consumer durables has been growing rapidly, the recruitment and training of personnel needed to service these products has lagged far behind.

For example, shortages of trained service personnel have keenly felt in the automobile industry, where tens of thousands of additional mechanics are said by industry sources to be needed annually. In another area, the use of electronic products has been sharply rising, but according to statistics compiled by the Department of Health, Education, and Welfare, the number of individuals completing vocational training in electronics repair has actually been declining. For major appliances, sales have grown during the past decade at a rate of over nine percent a year, but recruitment and training of service personnel has not kept pace.

These are serious shortages, which call for all reasonable steps to bring them to an end. The following sections set forth some of the more promising opportunities for improvement.

JOB STATUS

Service jobs currently carry little appeal as a career choice for high school students. A number of factors are responsible for this condition, but one of the most important is the emphasis placed on the college degree as the preferred stepping stone to success. The attraction of continued academic education has discouraged students from entering vocational fields. In addition, the relative cost of vocational education is higher than other secondary school alternatives. In view of these factors, it is not surprising that vocational training has not expanded to keep up with the growing service job market.

"Service jobs currently carry little appeal as a career choice for high school students."

The negative emphasis placed on service occupations by the educational system is reinforced by a general public view that service technicians are lower level employees engaged in dirty, unrewarding work. For most service occupations related to the consumer durables covered in this report, this impression is not a true reflection of the careers available, and it should be corrected whenever possible. The Sub-Council therefore recommends:

RECOMMENDATION 8

MANUFACTURERS, TRADE ASSOCIATIONS, AND EDUCATORS SHOULD TAKE STEPS TO IMPROVE SERVICE PERSONNEL JOB STATUS.

Some of the contributing factors in overall perception of job status are relatively easy to modify, and the results could be significant. For example, the simple decision to change the title of a job from "repairman" to "service technician" has been shown to have a substantial effect on the employee's concept of his own position, as well as on the customer's reaction to him.

". . . the simple decision to change the title of a job from "repairman" to "service technician" has been shown to have a substantial effect . . ."

Another job characteristic which is important is an identifiable avenue of professional growth. Whether the actual title clearly reflects it or not, the service occupation should have, as do other skilled occupations, a clearly defined "ladder of success' through which an employee may acquire increased responsibility. This can be difficult to accomplish for some service occupations but it is a worthwhile objective which deserves special efforts by employers of service personnel.

When it can be achieved, this avenue of growth can reduce employee attrition, raise morale and contribute significantly to better customer service.

Although a specific industry may have already defined a scale of job levels, and even assigned titles accurately reflecting job status, these must be carried to the appropriate audience: the potential serviceman and his sources of influence in job selection. Thus parents, educators, and students need to be made aware of the career opportunities available in the service professions. Similarly, consumers ought to be educated about the level of skill required to provide effective repair services. Manufacturers can contribute to this educational process by ensuring that the image of service occupations presented in advertising and product sales literature reflects these factors.

JOB QUALIFICATIONS

As a part of the general notion that formal academic education is both desirable and economically necessary, there has been a trend in recent years to place increasing emphasis on academic qualifications for jobs in many employment sectors. Artifically high academic requirements serve as unfortunate and undesirable deterrents to applicants whose formal education is limited but whose technical aptitude may make them well suited for skilled jobs required in product servicing. For this reason, the Sub-Council recommends:

"Artificially high academic requirements serve as unfortunate and undesirable deterrents to applicants..."

RECOMMENDATION 9

SERVICE PERSONNEL JOB PREREQUISITES SHOULD BE BASED ON TRAINING AND EXPERIENCE WHICH REFLECT THE ACTUAL SKILLS AND APTITUDES REQUIRED.

All companies involved in product servicing should review their employment criteria to be sure that unnecessary requirements are not a part of the recruitment conditions for servicing positions. In addition, trade associations can contribute to this end by assuming major coordinating roles in developing general job criteria for service positions within specific industries.

VOCATIONAL EDUCATION AND THE SERVICE INDUSTRY

For many years vocational education has been a primary source for new applicants in the service professions, but in the past few years enrollment has decreased, and many programs have failed to keep pace with the real job opportunities available. In addition, recent surveys indicate that many vocational school graduates in repair-oriented curricula do not enter repair positions at graduation. The increasing complexity of major consumer products contributes to this problem since they require specialized service and repair training which is frequently not available in general vocational schools.

"... many vocational school graduates in repair-oriented curricula do not enter repair positions at graduation."

For many years, business and industry, as well as trade associations, have worked extensively with local boards of education to assist them in designing the service-needs curricula of vocational schools. This support has included:

- sponsoring business and vocational advisors to local boards
- donating product components to schools offering general service curricula
- providing instructors
- conducting plant tours for students
- conducting training workshops for vocational instructors
- participating in local cooperative training programs.

Special trade associations programs, such as the Association of Home Appliance Manufacturers' vocational education guide "Training the Home Appliance Service Technician," or the Automobile Manufacturer Association's (now the Motor Vehicle Manufacturers Association) cooperative development of "Standards for Automotive Service Instruction in Secondary Schools," have assisted in setting product-related guidelines for vocational education. In general, however, a closer relationship between businesses and educational programs would assure that graduates have the specific skills required for the current service job market. The Sub-Council therefore recommends:

"... a closer relationship between businesses and educational programs would assure that graduates have the specific skills required ..."

RECOMMENDATION 10

MANUFACTURERS AND TRADE ASSOCIATIONS SHOULD EXPAND EFFORTS TO ASSIST VOCATIONAL EDUCATION PROGRAMS TO ASSURE THAT TRAINING IS DIRECTLY RELATED TO FUTURE JOB OPENINGS.

Direct interaction with both local school officials and national vocational education groups should be maintained on a continuous basis wherever possible to specify and update detailed skill requirements for service technicians. This business assistance should assure the availability of good quality, modern equipment for vocational training programs.

MANUFACTURER SERVICE TRAINING

Most major manufacturers have permanent staff members to undertake the training of service personnel. The specific character of these programs varies widely depending on the product-line involved.

In the appliance field, manufacturers offer assistance to local, independent service shops by conducting frequent workshop sessions throughout the country, and by making available current factory service manuals for study. Most training programs deal exclusively with factory authorized personnel, but there are a few companies which have established technical training schools for independent service personnel. In some of these programs, the curriculum is function-oriented, not product-oriented, and graduates are trained to service a range of products from several manufacturers.

"Many trade associations have come to accept the need to support industry-wide training programs as a necessary supplement to other training resources."

Many trade associations have come to accept the need to support industry-wide training programs as necessary supplement to other training resources. For example, The Auto Body Association of America, the National Association of Auto Trim Shops, the National Electronic Association, the Refrigeration Service Engineers Society and the Electronics Industries Association have all instituted industry-oriented training programs.

Programs of this type are worthwhile and they should be created for other industries where servicing needs exist.

Such programs not only could help provide adequate numbers of service technicians but they also can assure the continuing education which is essential to quality service and repair. Consumer demands for the services which depend upon properly trained service personnel will continue to require emphasis on the development of these training programs. The Sub-Council therefore recommends:

RECOMMENDATION 11

MANUFACTURERS AND TRADE ASSOCIATIONS SHOULD PLACE HIGH PRIORITY ON THE EXPANSION OF QUALITY SERVICE PERSONNEL TRAINING PROGRAMS.

These training programs should include not only the basic technical skills necessary to detect and repair product failures in the shortest possible time, but also mechanisms for periodic up-dating of training as new products are introduced. In addition, these programs should provide basic training in sound business practices and customer relations.

SERVICE PERSONNEL CERTIFICATION PROGRAMS

In recognition of the need for quality in product servicing activities, some companies and trade associations have initiated programs which go beyond training to the certification of service personnel as qualified to carry out their responsibilities. In addition to assuring quality service, these programs also can provide a visible means for the customer to identfy service personnel as qualified prior to authorization of repair.

Service personnel certification programs vary widely. Some companies offer certificates of proficiency to graduates of in-house training programs. Other use a network of "authorized" service dealers who have been specially trained to handle the firm's products. Some trade associations, such as the National Electronic Association, base their certification on national examinations.

On July 25, 1972 the automobile industry announced the formation of the National Institute for Automotive Service Excellence. Among other projects aimed at improving

automotive service, the Institute conducts a comprehensive, voluntary testing program to certify mechanics' competence. In its operations, the Institute is governed by a 27 member Board of Directors of working mechanics, employers of mechanics, public-interest representatives, educators, and experts from the automotive service industry.

The first steps toward formation of the Institute were taken in early 1970 by the National Automobile Dealers Association and the Automobile Manufacturers Association (now the Motor Vehicles Manufacturers Association). Their aim was to develop a nationwide, voluntary program through which mechanics employed in automotive service could obtain certification of their achievement of specified levels of competence in their work. The Educational Testing Service (ETS) of Princeton, New Jersey received a contract from the two groups to develop Certified General Automobile Mechanic Tests.

ETS used a Task Force of training directors and other representatives of domestic car and truck manufacturers, along with personnel from dealerships and other service shops to develop general specifications for the tests. Vocational instructors and auto mechanic teachers drafted the specific test items. In July 1971, a field study was conducted, involving approximately 800 working mechanics of various degrees of competence from all major segments of the automotive service industry, to determine whether the tests developed were valid measurements of competence.

The final ETS product is a set of four 80-question tests, each requiring about three hours. Each test covers a particular vehicle area:

- Engines and their main systems: induction, ignition, exhaust.
- Transmissions, clutches, drive lines, and axles.
- Suspension, steering, and brake systems.
- Starting, charging, basic electrical, and air conditioning systems.

ETS conducts and scores each test. A candidate who passes all four tests and who has two years of experience as a work-

ing mechanic will qualify as a Certified General Automotive Mechanic. The Certified Mechanic will be required to pass a recertification test every three years to assure that he is current with vehicle changes and improvements in servicing technology.

Initial costs of the National Institute have been underwritten by the program's innovators. Thereafter the Institute is expected to be self-supporting from test fees. The present fee is $10 per test or $40 for the full series.

Programs such as these serve two important functions for the service industry. First, they provide information which the consumer can use to recognize qualified service personnel. Second, from the point of view of the service technician, certification represents an incentive to improve his skill level, and informally recognizing this accomplishment it imparts a higher degree of job status to his position. These are important benefits, and they call for wider creation of service personnel certification programs. Accordingly, the Sub-Council recommends:

RECOMMENDATION 12

MANUFACTURERS AND TRADE ASSOCIATIONS SHOULD ESTABLISH SERVICE PERSONNEL CERTIFICATION PROGRAMS.

These certification programs can serve to focus business and trade association attention on the importance of quality service personnel training. In addition, the mechanism created can provide continuing frameworks for review and improvement of quality service systems for the consumer.

ELIMINATING SERVICE FRAUD

Even though responsible businesses take every reasonable step to assure quality in product servicing, serious problems remain for many consumers. There is ample evidence in all repair fields associated with major consumer products that in many cases repairs are entrusted to incompetent and dishonest service firms.

"... the consumer is usually unable to detect these practices prior to a losing experience."

Deceptive practices are employed by only a small minority of servicers, and the consumer is usually unable to detect these practices prior to a losing experience. Redress after the fact is almost impossible in these cases.

One technique encountered in this regard is the "bait and switch" advertisement, where specific repairs are advertised at low price in order to attract customers. Recommendations for more extensive repairs follow, involving unnecessary work, the selling of old parts as new, or charges for services not rendered.

The economic consequences of these incompetent and deceptive repairs are substantial. For example, estimates of the cost to consumers of inadequate auto repairs run to billions of dollars annually.

Business action can help to control some of these activities, through support of local organizations dedicated to the exposure and elimination of unethical practices in the marketplace. The most prominent agencies active in this field are the Better Business Bureaus, now established in 137 metropolitan areas. Local BBB's have been subject to substantial criticism in the past, but recently, concurrent with the establishment of a national council to support and coordinate local action, the BBBs have begun to take strong steps to improve their performance. They deserve the unqualified support of all reputable businesses in the important tasks they perform for consumers. The Sub-Council therefore recommends:

RECOMMENDATION 13

BUSINESSES SERVING THE CONSUMER MARKETPLACE SHOULD JOIN, SUPPORT AND ASSIST BETTER BUSINESS BUREAUS.

Smaller firms fulfill this obligation to consumers by active participation in BBB functions at the local level. Larger firms, especially those serving a nationwide market, have the additional responsibility to support the national Council of Better Business Bureaus in its goal to maintain a vigorous and effective network of local BBBs. Further, large companies should assure that their local offices support BBB activities within their communities. A new organization, the Committee for Constructive Consumerism, has just been formed to broaden the CBBB's financial base and thereby improve the services provided consumers by local BBBs. Each corporate member of the Committee, representing a major national company, will be asked to join the CBBB and local BBBs, and

pay a "fair-share" membership fee based upon sales and profits. They will then be asked to seek membership and financial support from 1,300 additional companies, with emphasis on increased activity in local BBBs. This effort deserves the strong support of the entire consumer durable goods industry.

LICENSING Notwithstanding action by local BBBs and other private organizations, or the adoption of industry certification programs, incompetent and deceptive practices sometimes cannot be controlled except through government action. In recognition of this fact, seven states (California, Connecticut, Florida, Indiana, Louisiana, Massachusetts, and Oregon) have enacted some form of service licensing laws covering electronics repair. In addition two states (California and Connecticut) have licensing laws for automobile repair. A number of other states are considering adoption of similar statutes.

One of the most successful licensing programs is that administered by the California Bureau of Repair Services. Since enactment of the Electronic Repair Dealer Registration Law in 1964, all persons engaged in the business of repairing, servicing or maintaining television, radio, tape recorders, or phonographic equipment must register with the Bureau and pay a fee. On July 1, 1973 home appliances became subject to the provisions of the 1964 law. The Bureau both initiates its own investigations and responds to consumer complaints. It may also informally mediate dealer/consumer complaints. The Bureau is empowered to suspend or revoke the registration of any repair shop for cause after appropriate hearing and may also seek injunctions against specific abuses. Acts that may result in revocation or suspension of registration include: authorizing false or misleading advertising; falsely inducing a customer to authorize repairs; any other fraudulent or dishonest act; and gross negligence. Registrants are required to give their customers an invoice describing all service work done and all parts supplied and their price, labor charges, the shop's registration number and name

and address. Upon customer request, a written estimate of repair costs must be made which may not be exceeded without customer consent. Finally, the law prohibits technicians from being paid a commission on parts they install.

Between 1964 and January 1973 the Bureau of Repair Services has handled more than 21,000 consumer complaints. It currently receives about 2,000 complaints a year. Through January 1973, more than 250 repair dealers had been prosecuted for violation of the law; the fines ran as high as $550 and one dealer received a six-month jail term. Bureau officials say, however, that their most effective weapon in cases involving fraud continues to be their power to put repair shops which violate the law out of business. The Bureau estimates that, based on the amount spent on repairs in 1963, it has saved the California consumer $15 million a year in false or excess charges. On June 30, 1972 a new law took effect requiring California automotive repair dealers to register with a Bureau of Automotive Repair. More than 17,000 consumer complaints were received by the Bureau during its first eight months of operation.

The existing licensing and industry certification programs operated at the state and local levels can provide the experience and information necessary for the development of regulatory systems which best assist the consumer in obtaining honest and competent service. However, each of the current regulations originates from a different authority, so they often differ significantly in their impact on business. Thus, manufacturers selling in interstate markets can be faced with a variety of regulations affecting their products and services, a situation which will be impractical and costly to the consumer in the long run. A uniform system will therefore be the best future solution to continuing problems in this area. To develop that system nationwide:

"...manufacturers selling in interstate markets can be faced with a variety of regulations affecting their products and services..."

RECOMMENDATION 14

MANUFACTURERS, TRADE ASSOCIATIONS, AND OFFICIALS OF ALL LEVELS OF GOVERNMENT SHOULD COOPERATE IN THE DEVELOPMENT OF A UNIFORM STATE LAW FOR LICENSING AND REGULATING SERVICE FIRMS.

An appropriate focus for this effort is the National Conference of Commissioners on Uniform State Laws. The Con-

ference is the national organization of the state commissioners appointed by the Governor of each state, the District of Columbia, and Puerto Rico to promote uniformity in state law on all subjects where uniformity is desirable and practicable. Through the Conference, the Commissioners participate in drafting specific acts, and from the Conference the Commissioners on Uniform State Laws of each state obtain help in their endeavor to secure the enactment by ordinary legislative procedures of identical acts in each state so that uniformity can be achieved. Interested private and public groups and officials can propose that the Conference develop a uniform state licensing law and assist in its drafting. Such a law should help curb deceptive practices by technicians as well as shop owners, since the latter will be less likely to condone actions by their employees which might result in loss of the owner's license to do business.

CODE OF RESPONSIBLE SERVICING PRACTICES

Notwithstanding current or future regulation in this area, businesses and their associations should adhere to responsible voluntary guidelines for business practices in the service sector. In addition to guiding operating practices, such a code would serve to inform consumers about the treatment to be expected when products are serviced.

Each durable goods industry involved in service and repair should establish its own specific set of guidelines on this subject, tailoring the provisions to the needs of its customers. However, some general principles are applicable broadly to all such codes. They are:

Code of Responsible Servicing Practices

1. Customers should be offered an estimate of cost in advance of services to be rendered.
2. Customers should be promptly notified if service appointments cannot be kept.
3. Only repairs authorized in writing by the customer should be performed, except where other arrangements have been made to the customer's satisfaction.

4. A written, itemized invoice for all parts, labor, and any other charges, should be given to the customer upon completion of the work.
5. All repair services should be guaranteed for a reasonable length of time.
6. Appropriate records of services performed and materials used should be maintained by the service company for at least one year.
7. Service technicians should not be paid on a basis that is contingent upon the size of the customer's repair bill.
8. The service dealer should maintain insurance coverage adequate to protect the customer's property while it is in his custody.
9. Service dealers should cooperate with consumer protection agencies at all levels of government to insure satisfactory resolution of customer complaints.
10. Customers should be treated courteously at all times, and all complaints should be given full and fair consideration.

REPLACEMENT PARTS AVAILABILITY

Many manufacturers are placing greater emphasis on parts availability and service than ever before. This change started long before the present widespread public interest in consumer problems, and was the result of corporate recognition of the importance of consumer satisfaction, the contribution it made to repeat or related sales, and the profit opportunities of an effective parts and accessories operation. Although the vast majority of demands for replacement parts are being met on a timely and efficient basis, most manufacturers realize that further improvements are needed and are moving ahead with plans and programs to achieve an even higher level of parts availability for consumers.

Complaint surveys on consumer durables generally indicate that as many as 15 to 20% of complaints are directly related to a dissatisfaction in the handling of replacement parts. Most of these complaints involve delays in making

critical replacement parts available. In the meantime, the consumer must usually do without the use of his product. Consumers have also complained about the costs of replacement parts, especially where they are high in relationship to the initial cost of the product.

In some cases manufacturers have made great improvements in parts availability operations, but apathy on the part of the distribution network has failed to pass this through to the consumer. Thus, manufacturers need to assure that the entire distribution network is aware of the importance of the replacement parts business to better customer service. Accordingly, the Sub-Council recommends:

RECOMMENDATION 15

PRODUCTION AND DELIVERY OF REPLACEMENT PARTS SHOULD BE GIVEN MAJOR EMPHASIS IN THE MANUFACTURING AND DISTRIBUTION PROCESSES.

This emphasis should be firmly established by all manufacturers, since consumers expect timely service. Investments in plant and personnel to improve service and repair are wasted whenever the parts needed are not readily available.

A recent survey of consumer tolerance in waiting for "critical" replacement parts, conducted for a major electronic products manufacturer, demonstrates the public's expectations on this subject. Heads of households were asked how long they would be willing to wait for a replacement part for an automobile, color television set, and automatic washer, assuming that only one of each was available to the household. The tolerance was measured for equipment which was 30 days old, three years old, and six years old. The data received is summarized in the following table:

MEAN ACCEPTABLE DELAY (DAYS)

Product	Age of Product 30 days	3 years	6 years
Automobile	1.2	1.7	2.1
Color TV	2.2	2.2	4.5
Automatic Washer	2.9	4.0	4.6

The results indicate that very little delay is acceptable in the repair of these common consumer products. In fact, the length of time a consumer is willing to wait for a replacement part is, in general, much shorter than the delivery cycle that most manufacturers can offer if the part is not available locally.

"The inability to obtain prompt repair often results in the consumer's conclusion that a poor choice was made in selecting the original product."

The inability to obtain prompt repair often results in the consumer's conclusion that a poor choice was made in selecting the original product. Thus, to the manufacturer, this situation can have significant effects on repeat sales and company reputation. Accordingly, manufacturers should establish standards and procedures for timely delivery of replacement parts which will meet customer expectations. One difficulty in this area has been the view by some manufacturers that the replacement parts business is only an obligation, rather than also an opportunity. In some cases, manufacturers have seen rising costs limit their ability to operate a replacement parts business profitably. However, most businesses now have recognized the profit potential in the replacement parts business. As a result these operations have been organized on a more efficient basis, so that satisfactory returns can be made on the investments required. In some cases, this business has expanded into related accessories on the same product lines to gain a broader base for profit potential. Distributors and dealers also find this expansion presents the same opportunity to them, and as a result, better replacement parts service is made available to the consumer at a lower cost.

COMPLAINT RESOLUTION

Despite the increasing complexity of consumer products, technological advances have greatly improved overall product reliability. Repair statistics on major consumer products show conclusively that substantially less repair service is required per product today than in the past. This may not seem true to the typical consumer however, since the use of these products is increasing steadily and many households now contain 15 or 20 major electrical or

mechanical products. In addition, these products have been backed by lengthening periods of warranty, and they normally achieve a longer life span than equivalent products of a few years ago.

Both manufacturers and buyers recognize that product failure will eventually occur, even in the most reliable products. The consumer does expect, however, that when the product fails it will be repaired quickly, efficiently, and with minimum inconvenience. If the problem is not a matter readily solvable by product repair, or is an outgrowth of repair experience (poor warranty service for example), the consumer further expects that there is some representative of the manufacturer to whom he can turn for assistance.

"Both manufacturers and buyers recognize that product failure will eventually occur, even in the most reliable products."

The substance of these complaints should be resolved on a direct person-to-person basis whenever possible. Even if the problem causing the complaint cannot be rectified immediately, the manufacturer should take action to be certain that the consumer is aware of the steps being taken to satisfy him.

Effective complaint resolution requires that knowledgeable personnel be available to deal authoritatively with individual consumer problems with products or services. Although complaints must be handled on an individual basis, it is equally important for the manufacturer to maintain overall trend analyses of consumer complaints, to reduce future problems for other customers.

In designing the operational systems for consumer complaint handling, steps should be taken to ease consumer access to this avenue for redress. This might include posting the name, address, and telephone number of the manufacturer's or retailer's "consumer relations" staff at the point of purchase, giving such information to each Better Business Bureau office, or sponsoring advertising programs providing information about where to voice complaints. Manufacturers in the automobile and appliance industries have experimented with programs which offer consumers a direct toll-free telephone line to the consumer representative at the company's headquarters as an assistance in resolving problems with their products. These programs are still relatively new and their

efficiency and effectiveness in handling complaints cannot be evaluated on industry-wide basis at this point, but the system is worth serious consideration by all major product manufacturers serving widespread geographic markets.

When consumer problems are not resolvable directly with the manufacturer or business involved, alternative means should be available for review of the complaint. In these situations, both manufacturers and consumers are accepting, in increasing numbers, the concept of third party arbitration as a fair and appropriate forum for independent redress. Voluntary arbitration systems can provide a quick and equitable solution to complaints, therefore, the Sub-Council recommends:

RECOMMENDATION 16

BUSINESSES SHOULD SUPPORT INDEPENDENT, THIRD-PARTY COMPLAINT SETTLEMENT PROCEDURES SUCH AS MEDIATION AND ARBITRATION FOR RESOLVING CONSUMER DISPUTES, ESPECIALLY IF OTHER VOLUNTARY MECHANISMS HAVE BEEN TRIED WITHOUT SUCCESS.

The Council of Better Business Bureaus has taken a major step in the establishment of a national network of these consumer arbitration mechanisms. Through local Better Business Bureau offices, arbitration panels have been created to provide an independent resource for complaint resolution. The CBBB program is established as a strictly voluntary system, which is used only when all informal efforts to bring an end to disputes have failed. Hearings are private, with confidential results, and the service is available at no charge. Post-resolution inspection for compliance is available, in the event of further contention.

Other organized groups in the business community have also initiated programs to serve as negotiators in business-consumer disputes. Some trade associations have adopted programs for this purpose, one of the most successful being the Major Appliance Consumer Action Panel (MACAP) established by the Association of Home Appliance Manufacturers, the Gas Appliance Manufacturers Association, and the American Retail Federation. MACAP is a volunteer board of

experts, and although sponsored by the industry trade associations, it is completely autonomous in its review and resolution of consumer complaints. In 1973, more than 35 million major appliances will be sold, most carrying the advice that MACAP should be contacted if a manufacturer fails to meet his responsibilities for the product.

MACAP insists that consumers first contact the manufacturer about their problems. If that fails to produce satisfaction, MACAP contacts the manufacturer to request resolution of the problem. Failure to achieve a satisfactory result at this phase leads to a review of the problem by the MACAP panel itself to product specific recommendations for the manufacturer.

As of December 31, 1972, MACAP had received a cumulative total of 7,413 complaints. Of these, 5,581 were closed satisfactorily, 1,514 were in process, and only 318 closed unsatisfactorily. The unsatisfactory results were primarily from consumers who were unwilling to accept MACAP's recommendation.

The success of MACAP stems from three major factors:

1. The consumer panel is made up of individuals from outside the appliance industry and it operates independently.
2. The competitive firms in the appliance business recognized a common problem and have worked cooperatively with a dedicated interest to see that it would succeed.
3. The program is not limited to complaints alone but serves as a means through which the consumer can make suggestions for the improvement of the product and for improvement of marketing and servicing of the product.

The MACAP approach is one of many currently underway among the nation's trade associations to take firm action to deal fairly with consumer complaints. These activities should have the full support of manufacturers and retailers. Accordingly:

RECOMMENDATION 17

TRADE ASSOCIATIONS SHOULD SEEK TO COORDINATE INFORMATION ON SERVICE PROBLEMS FOR THEIR INDUSTRIES, INCLUDING THE ESTABLISHMENT OF INDEPENDENT COMPLAINT RESOLUTION MECHANISMS.

Action of this type is a responsible assumption of leadership in the consumer's behalf. All trade associations active in consumer product industries should consider instituting these programs, at least on a trial basis.

In cases where direct interaction with the manufacturer fails to result in a resolution of the problem, and where the consumer does not recognize an independent alternative for negotiation, government support is frequently sought as a means of obtaining redress. These consumer advocate roles are being increasingly adopted by state and local governments in response to this demand. Reputable businesses should seek to establish continuing, constructive contacts with these agencies to assist wherever possible in the fair disposition of problems brought to these agencies by consumers. Therefore, the Sub-Council recommends:

RECOMMENDATION 18

MANUFACTURERS SHOULD ESTABLISH DIRECT RELATIONSHIPS WITH CONSUMER PROTECTION AGENCIES TO ASSIST IN RESOLVING CONSUMER PROBLEMS WITH PRODUCT PERFORMANCE AND SERVICING.

Each business involved in the production, sale, and servicing of consumer goods should provide established liaison personnel to cooperate with these government agencies when their intervention has been initiated by consumers. A prompt and complete review of these problems is in everyone's interest, and special efforts should be made to assure that the communication channels are in place which will allow this to happen.

In summary, the Sub-Council firmly believes that manufacturers, trade associations, and government must expand their efforts to reduce consumer dissatisfaction with product performance and product servicing. Adoption of the recommendations made here can contribute significantly to the achievement of that goal.

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